a second race adapted for engagement with the other of said rotating race engagement surface and stationary race engagement surface, said second race being disposed between said annular portions of said first race; and

a plurality of bearing elements disposed between said first and second races.

Please amend claim 31 to read as follows:

31. (Amended) The seal of claim 26 wherein one of said rotating race engagement surface and said stationary race engagement surface defines a pair of annular grooves therein; and

each of said annular portions of said first race extends into one of said grooves.

Remarks

In paragraph 1 of the Office Action, the Examiner has objected to claim 26 and indicated that the phrase "a rotating race engagement surface" should read "a pair of rotating race engagement surfaces" in line 1. Applicant respectfully traverses this objection for the following reasons.

The claim is not intended to be limited to a seal for use adjacent to a pair of rotating race engagement surfaces. Rather, the claim is intended to be directed to a seal for use adjacent to a rotating race engagement surface and a stationary race engagement surface. Accordingly, claim 26 has been amended to clarify this. Claim 31 has been amended for consistency. The scope of these claim has not been changed.

In paragraph 3 of the Office Action, the Examiner has rejected claim 22 under 35 U.S.C. § 112 because of insufficient antecedent basis for the limitation "bottom surfaces" in the claim. Claim 22 has been amended for clarity and should now overcome this rejection. The scope of the claim has not changed.

In paragraph 5 of the Office Action, the Examiner has rejected claims 1-34 under 35 U.S.C. § 102(b) as being anticipated by U. S. Patent No. 5,558,491 to Andrews. The Examiner states:

> In response to **claims 1-13**: Andrews discloses a seal (10) for use with a rotating surface (22) and a stationary surface (21) comprising a ring (14), first race, second race and a plurality of roller bearing elements substantially as claimed (see attachment). The first race defines a recess (29) therein where the second race and bearing elements are disposed.
>
> In response to **claims 14-25:** Andrews discloses an apparatus (Fig. 1) comprising a stationary housing (21), rotor (23), ring (14), first bearing race, second bearing race, bearing cage, and bearing elements as claimed (see attachment). The first bearing race defines a recess (29) therein where the second bearing race, cage, and bearing elements are disposed.
>
> In response to **claims 26-34:** The reference discloses applicant's invention substantially as claimed (see attachment).

Applicant respectfully traverses this rejection for the following reasons.

Generally, Andrews lacks specific elements of every claim in the present application, and therefore a rejection under 35 U.S.C. § 102(b) is incorrect. It is important to note that, while Andrews identifies the invention in FIG. 1 therein as being a "roller bearing," what is illustrated is in fact a ball bearing. Thus, Andrews incorrectly identifies a basic machine element, namely a ball bearing, and teaches nothing about the use of roller bearings. Applicant also respectfully takes exception to the identified elements in the Examiner's attachment to the Office Action. The element identified as a "roller bearing" in that attachment is not a roller bearing but rather a spherical element of a ball bearing. What the Examiner has identified as "planar bearing surfaces" are not planar, but rather concentric cylindrical surfaces with partially spherical indentations therein to receive the spherical ball bearing elements.

The Examiner refers to "ring 14," but it is unclear what this element is because reference numeral 14 in the Andrews patent refers to an entire bearing. This bearing, of course, is not equivalent to the ring claimed in claims 1-25.

Since it is not clear what ring 14 is as identified in the Office Action, it is not clear that such a ring seals on its outer peripheral surface as specified in claims 3 and 16. With regard to claims 4 and 17, no planar bearing surfaces are identified or shown in Andrews. With regard to claims 5 and 18, it is clear that there are no bearing elements engaging such planar bearing surfaces.

With regard to claims 6 and 19, as already mentioned, Andrews does not actually show roller bearing elements. In normal bearing terminology, and that is certainly what was intended in the specification of the present application, roller bearing elements are generally cylindrical in shape. Applicant and Applicant's attorney are not aware of any usage of the term "roller bearing" when ball bearings are the type of bearings in question.

With regard to claims 7 and 20, there is no recess in a first bearing race in which a second bearing race, cage and bearing elements are disposed. The ball bearing elements, cage and inner race are disposed in the cylindrical central opening through the outer race in Andrews; but this is not the same as the recess of the present invention.

Concerning claims 8, 9 and 21, since it is not clear what "ring" 14 is as described in the Office Action, it is certainly not clear that such a ring defines concentric annular grooves therein. The only thing in Andrews which might be described as a groove are the grooves on each end of the outer race in which an element unidentified by Andrews is disposed. This element is identified as an "annular portion" in the attachment by the Examiner. However, even acknowledging these grooves in Andrews, the grooves are not concentric, and therefore Andrews cannot be a reference under 35 U.S.C. § 102. Further, the "annular portions" identified on the Examiner's attachment are

not part of either bearing race, and thus Andrews does not have the specific element of a bearing race comprising a pair of annular portions extending into concentric grooves.

With regard to claims 10 and 22, there is nothing in Andrews which shows a gap between the bottom surface of a groove and an annular portion extending into the groove. The "gap" identified in the Examiner's attachment simply does not meet this definition. In fact, the only portion of the "gap" which includes the grooves in Andrews clearly show the "annular portion" extending all the way outwardly into those grooves. There is no gap shown in the groove.

With regard to claims 11 and 23, again Andrews does not show the claimed feature of a race engagement surface of a ring between concentric grooves. This is even confirmed by the Examiner's attachment in which the "race engagement surfaces" are concentric cylindrical surfaces on the outside of the outer race and the inside of the inner race, respectively, and there is no way that this can be described as being between concentric grooves.

Concerning claims 12 and 24, it is again noted that Andrews does not disclose a roller bearing, and therefore cannot be used as a reference under 35 U.S.C. § 102 for an apparatus in which the bearing elements are rollers.

With regard to claims 13 and 25, Andrews does not show in any way a seal having a pair of race engagement surfaces, a pair of first races, a pair of second races and bearing elements disposed between corresponding races. The most that Andrews discloses is a plurality of bearings in FIG. 3, but this layout is nothing at all like the claimed invention.

With regard to claims 26-34, Andrews does not disclose a seal with the first race defining outer and inner annular portions, a second race disposed between the annular portions, and a plurality of bearing elements disposed between the first and second races.

With regard to claims 28 and 29, Andrews does not show planar bearing surfaces as previously discussed. With regard to claims 30 and 34, Andrews does not disclose bearing elements which are rollers.

As to claim 31, Andrews does not disclose the claimed annular grooves with annular portions of the first bearing race extending therein, and more specifically with regard to claim 32, Andrews does not show annular portions which are substantially concentric. Additionally, Andrews does not discuss such annular portions which are spaced from bottom surfaces of such grooves.

Summary

Claims 22, 26 and 31 have been amended herein. It is believed that these amendments overcome the objection to claim 26 and the rejection under 35 U.S.C. §112 of claim 22.

Applicant has submitted arguments herein which clearly show that Andrews is an insufficient reference under 35 U.S.C. § 102(b) in that it fails to disclose a number of specific elements of the claimed invention. Accordingly, the claims should be allowable.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner For Patents, Washington, D.C. 20231 on December 23, 2002

Neal R. Kennedy
name of applicant, assignee or Registered Representative

Signature

Dec. 23, 2002
Date of Signature

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

Please amend claim 22 as follows:

22. (Amended) The apparatus of claim 21 wherein:

said grooves have bottom surfaces which face one another; and

ends of said annular portions and said [facing] bottom surfaces of said grooves define a gap therebetween.

Please amend claim 26 as follows:

26. (Amended) A seal for use adjacent to a rotating race engagement surface and a stationary race engagement surface and comprising:

a first race adapted for engagement with one of said rotating race engagement surface and said stationary race engagement surface, said first race defining outer and inner annular portions;

a second race adapted for engagement with the other of said rotating race engagement surface and stationary race engagement surface, said second race being disposed between said annular portions of said first race; and

a plurality of bearing elements disposed between said first and second races.

Please amend claim 31 as follows:

31. (Amended) The seal of claim 26 wherein one of said rotating race engagement surface and said stationary race engagement surface defines a pair of annular grooves therein; and

each of said annular portions of said first race extends into one of said grooves.